



*Saskatchewan*

*Preliminary Runoff Outlook*

**February 2013**

*Prepared by:*  
River Forecast Centre  
Operations Division  
Water Security Agency

## Hydrological Conditions in Saskatchewan as of February 1, 2013

### General Overview

The Water Security Agency (WSA) continues to prepare for the 2013 spring runoff. As of February 1, 2013 the spring runoff potential for the province is shown in Figure 1.

Due to below normal rainfall in the last half of summer and fall 2012, the majority of the agricultural area of the province went into freeze-up with relatively dry soil conditions. Recorded Winter precipitation to February 1, 2013 across the entire southern half of the province has been above normal. The estimated water equivalent in the snowpack on February 1 is generally 150% to 200% of average for this time of year. Thus, above normal runoff is expected assuming average precipitation between now and spring runoff. If the above normal winter precipitation trend continues, 2013 runoff will likely be well above average.

It must be emphasized that this preliminary runoff forecast is based on limited precipitation data and should be used as a general guide for large areas. Local conditions may vary significantly. Above normal precipitation prior to spring runoff and/or a fast melt would result in higher runoff. More detailed runoff forecasts will be prepared in early March and April.

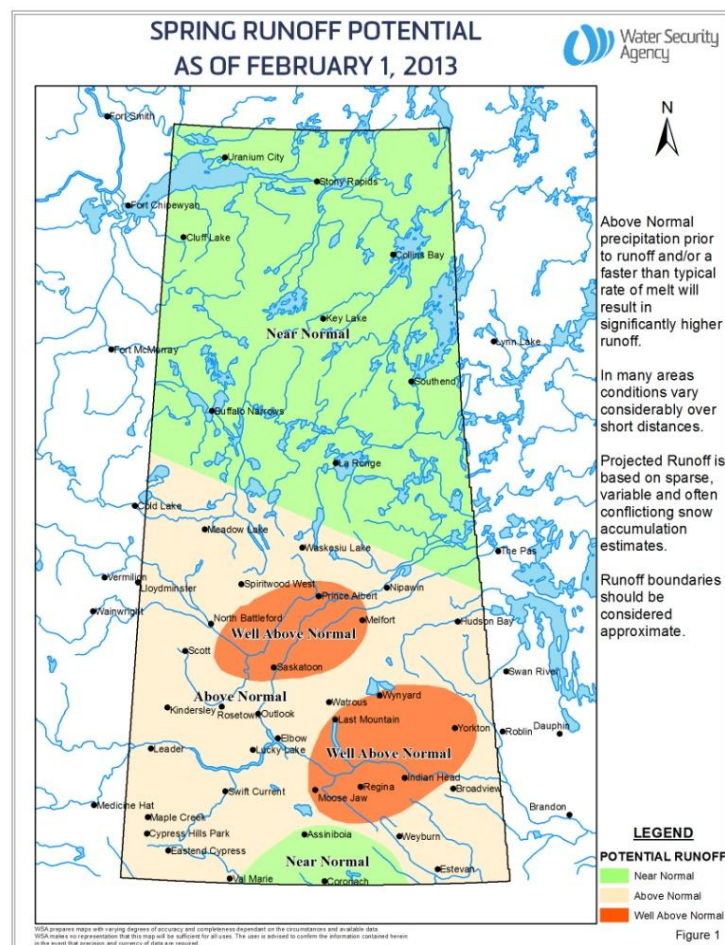


Figure 1

## Summary of 2012

Following extremely high runoff in 2011, 2012 spring runoff from snowmelt was near normal, refilling most water supply reservoirs. April and May 2012 rainfall across the vast majority of Saskatchewan was well above normal keeping most reservoirs near full.

Summer rainfall in June, July, and August 2012 was below normal for the band along the United States border, near normal for the central portion of the agricultural area, and above normal for the area north of a line extending from Rosetown to Melfort.

Figure 2 shows fall precipitation was extremely low for the area south of Saskatoon, near normal for areas north of Saskatoon. The exception is an area northwest of Prince Albert and near Meadow Lake where fall precipitation was above normal.

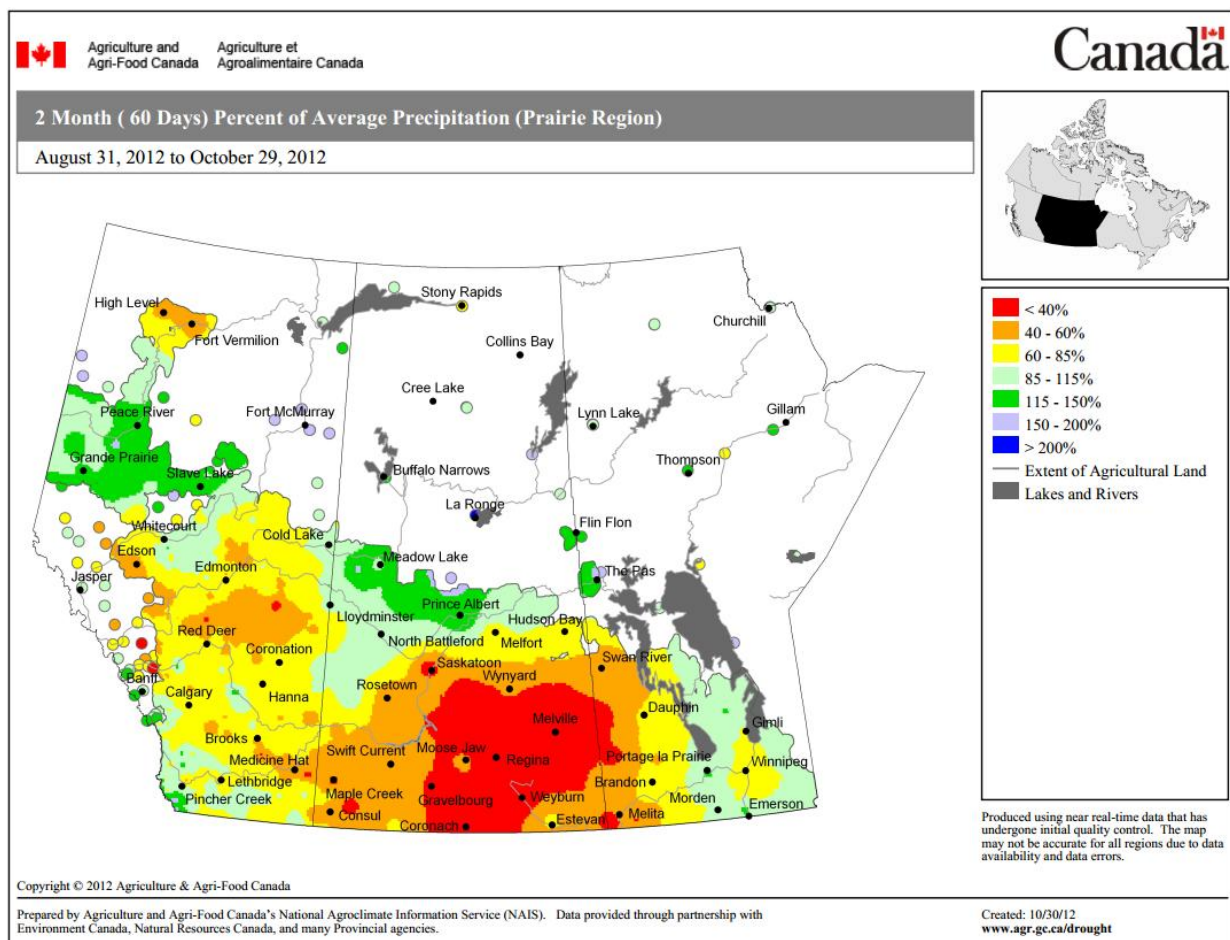
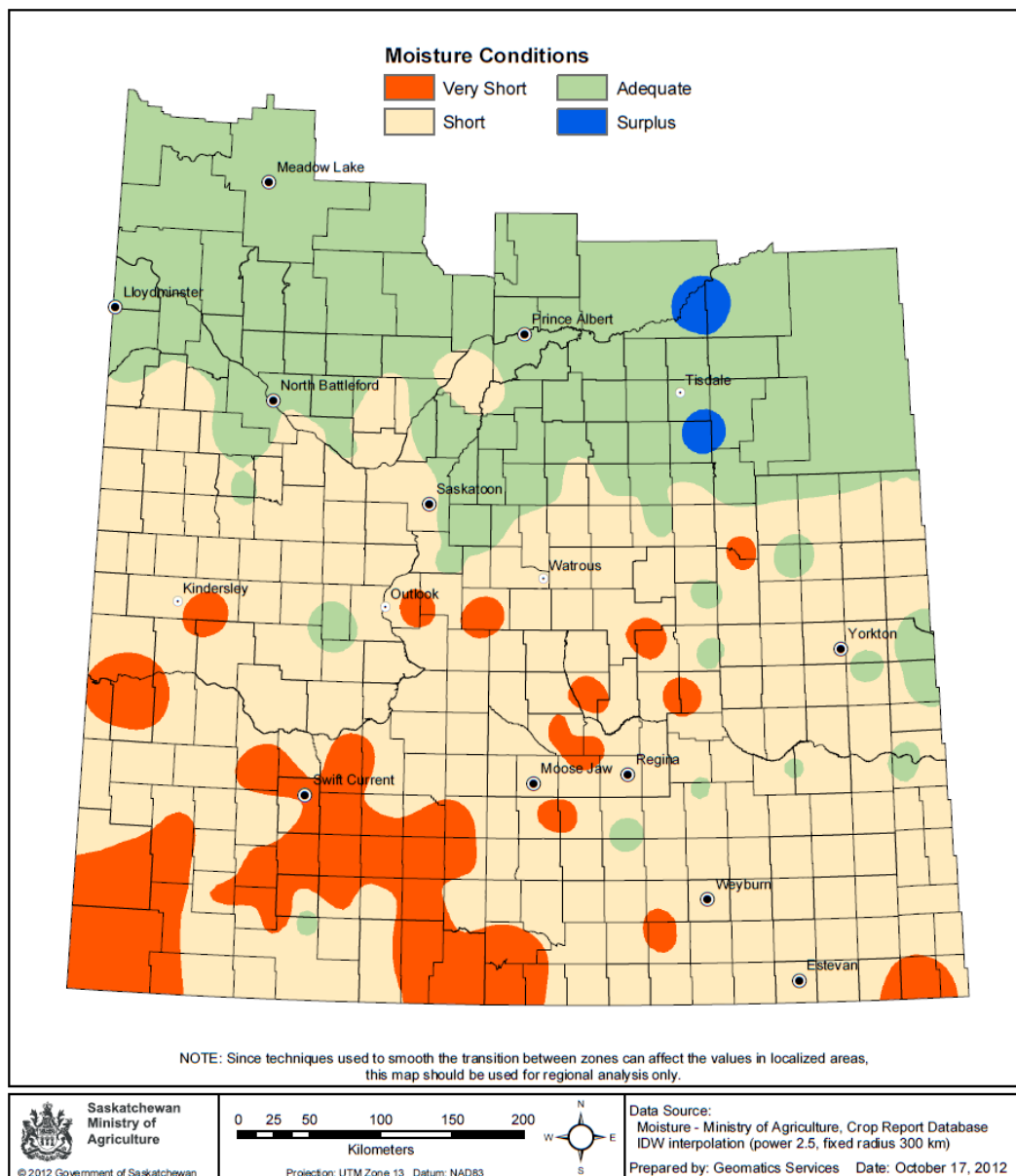


Figure 2

## Fall Top Soil Moisture Conditions

The area of the province with below normal summer precipitation and well below normal fall precipitation has resulted in relatively dry top soil moisture conditions. The Saskatchewan Ministry of Agriculture is classifying moisture conditions for much of the area south of Saskatoon as “short” (Figure 3). In some areas, particularly in the southwest, topsoil moisture conditions are classified as “very short.”



**Figure 3**

However, after the fall soil moisture map was produced there was significant late fall rainfall in the east central portion of the province as shown in Figure 4. Thus in these areas the antecedent moisture conditions is higher than indicated on the October 17, 2012 soil moisture map.

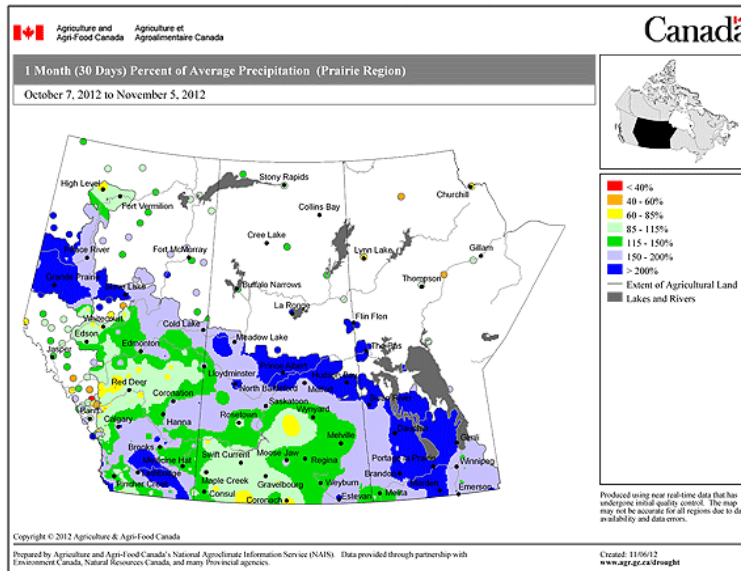


Figure 4

### Early Winter 2013 Precipitation

Figure 5 shows recorded snowfall November 1, 2012, to February 1, 2013. This map is prepared using point snowfall data. This map shows winter precipitation is above average for most of the agricultural portion of Saskatchewan with well above normal in the Moose Jaw, Regina, and Yorkton areas.

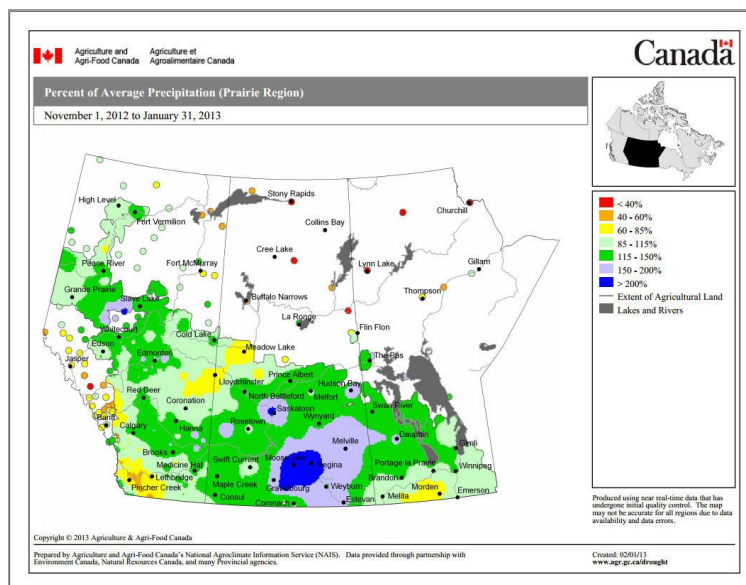
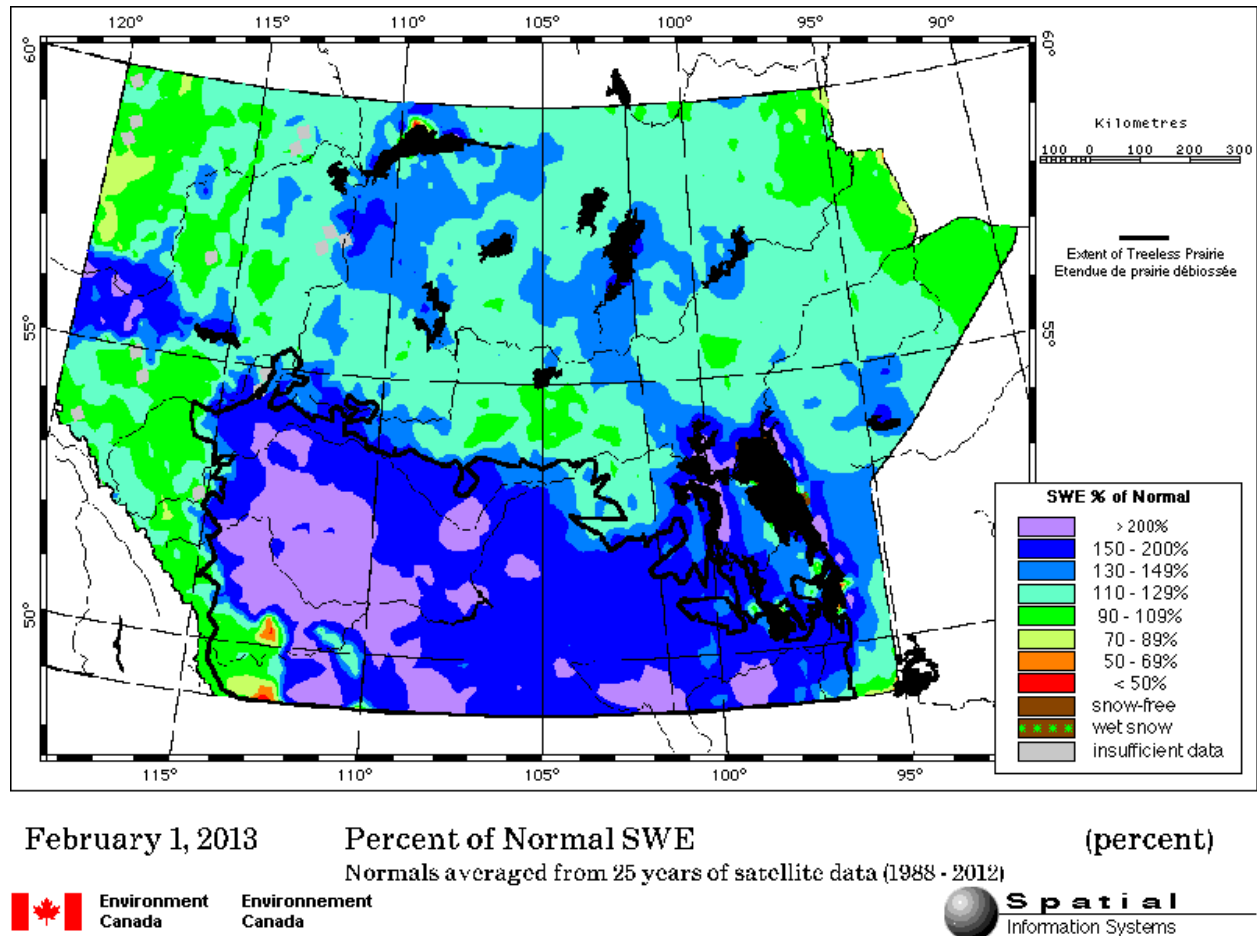


Figure 5

## February 1, 2013 Snowpack Water Equivalent

Figure 6 shows the estimated water equivalent in the existing snowpack as of February 1, 2013 as a percentage of normal for this time of year (estimated via satellite). This figure shows the snowpack across the entire agricultural area is approximately 200% of normal.



**Figure 6**

Manual snow core samples taken by WSA at the end of January generally indicated both the point and satellite snowfall data to be on average 20% high, with the pattern indicated by point data more closely matching field observations.

It is important to keep in perspective that there is over 2 months of winter remaining. With average precipitation, the amount of present excess snow becomes relatively less significant.



## North and South Saskatchewan River Basins

As of February 1, 2013 the snowpack in the headwaters of the North and South Saskatchewan Rivers ranges from generally slightly below normal in the North Saskatchewan River headwaters to above normal in the headwaters of the Oldman River Basin (as indicated by snowpillows operated by Alberta Environment).

## Long Range Precipitation Forecast

Long range precipitation forecasts from Environment Canada for southern and central Saskatchewan show that near normal precipitation is most likely for the winter of 2012/13 (Figure 7).

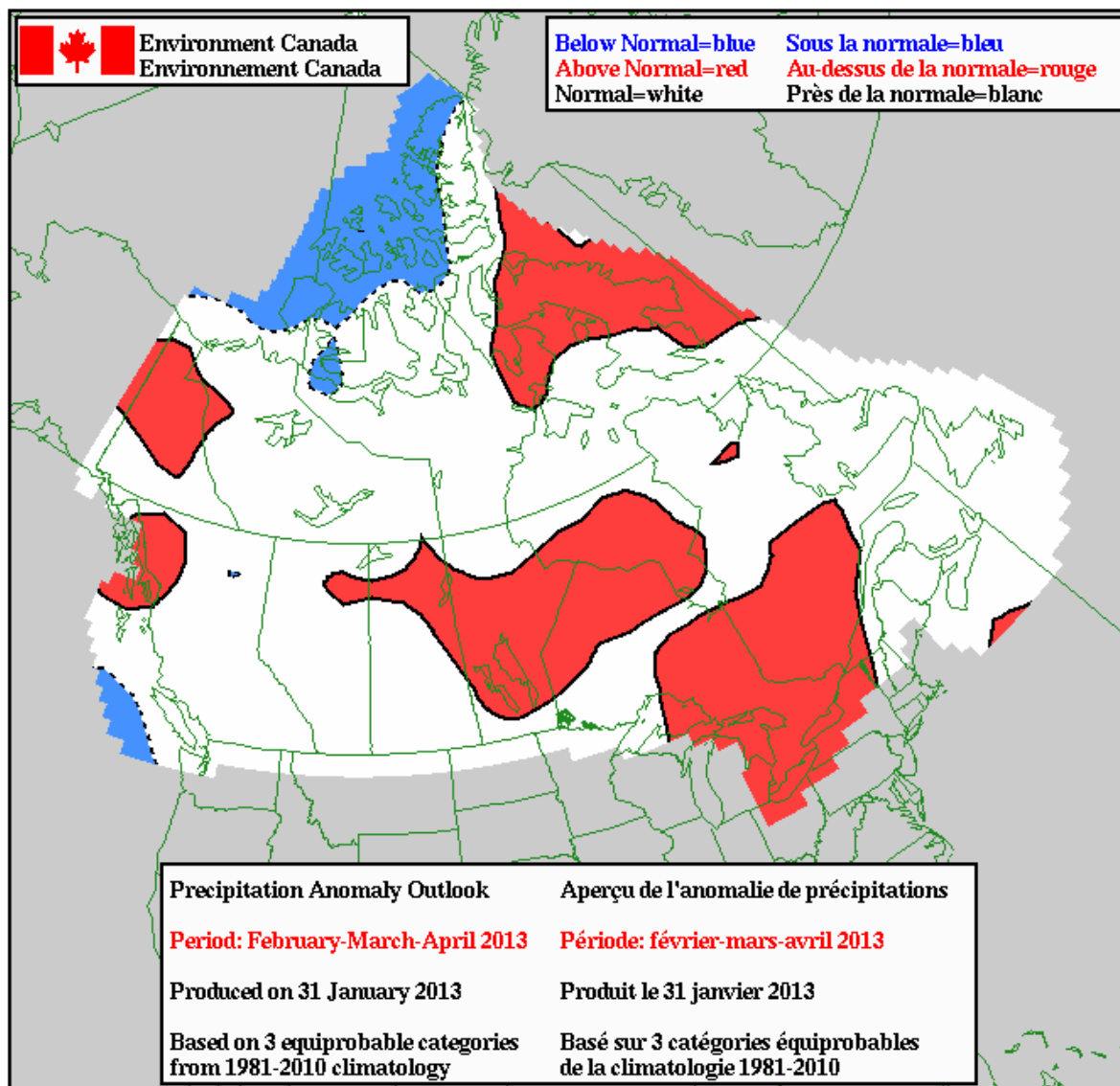


Figure 7

## **Summary Preliminary 2013 Spring Runoff Forecast**

Recorded winter precipitation has been above normal for most of the agricultural portion of the province. Satellite imagery also indicates the water equivalent in the snowpack is well above normal for this time of year. WSA will continue to monitor conditions. As spring approaches, additional manual snow sampling will be undertaken to assist in verifying the actual snowpack.

As of February 1, 2013 the runoff potential is generally above normal, with pockets of well above normal around Moose Jaw, Regina, Yorkton and Saskatoon.

WSA will be issuing more detailed forecasts in early March and April.



SOUTH SASKATCHEWAN RIVER							
Month	Mean Inflow (m <sup>3</sup> /s)			Mean Outflow (m <sup>3</sup> /s)			Projected Month-end Elev (m)
	Low <sup>1/</sup> Estimate	Best Estimate	High <sup>1/</sup> Estimate	Low Estimate	Best Estimate	High Estimate	Best Estimate
February	80	100	110	250	300	320	551.15
March	120	150	190	100	200	270	550.74
April	130	220	240	60	120	200	551.46
May	150	270	370	50	110	200	552.48
June	340	560	780	50	110	250	555.15
July	160	345	600	50	110	320	556.32
The total inflow forecast <sup>2/</sup> for the February to July period is: Low Estimate = 2.6 x 10 <sup>6</sup> dam <sup>3</sup> or 68% of normal. <sup>3/</sup> Best Estimate = 4.3 x 10 <sup>6</sup> dam <sup>3</sup> or 115% of normal. <sup>3/</sup> High Estimate = 6.0 x 10 <sup>6</sup> dam <sup>3</sup> or 160% of normal. <sup>3/</sup>							
<sup>1/</sup> Low and high estimates are based on lower and upper quartile precipitation, respectively. <sup>2/</sup> Inflow forecasts are expressed in cubic decametres (dam <sup>3</sup> ). <sup>3/</sup> Normal February to July inflow to Lake Diefenbaker (assuming normal Alberta uses) is 3.8 x 10 <sup>6</sup> dam <sup>3</sup> .							

NORTH SASKATCHEWAN RIVER			
Month	Mean Flow at Prince Albert (m <sup>3</sup> /s)		
	Low <sup>1/</sup> Estimate	Best Estimate	High Estimate
February	90	150	160
March	100	130	150
April	270	300	400
May	240	330	400
June	260	320	430
July	250	350	550
The total inflow forecast <sup>2/</sup> for the February to July period is: Low Estimate = 3.2 x 10 <sup>6</sup> dam <sup>3</sup> or 77% of normal. <sup>3/</sup> Best Estimate = 4.2 x 10 <sup>6</sup> dam <sup>3</sup> or 100% of normal. <sup>3/</sup> High Estimate = 5.5 x 10 <sup>6</sup> dam <sup>3</sup> or 130% of normal. <sup>3/</sup>			
<sup>1/</sup> Low and high estimates are based on lower and upper quartile precipitation, respectively. <sup>2/</sup> Inflow forecasts are expressed in cubic decametres (dam <sup>3</sup> ). <sup>3/</sup> Normal February to July inflow to Saskatchewan (assuming normal Alberta uses) is 4.1 x 10 <sup>6</sup> dam <sup>3</sup> .			

SASKATCHEWAN RIVER						
Month	Mean Inflow to Codette Reservoir (m <sup>3</sup> /s)			Mean Outflow From Tobin Lake (m <sup>3</sup> /s)		
	Low Estimate	Best Estimate	High Estimate	Low Estimate	Best Estimate	High Estimate
February	310	450	480	300	440	470
March	200	270	420	245	325	490
April	330	460	550	295	420	500
May	300	415	560	280	400	530
June	315	410	630	285	370	590
July	315	450	850	285	410	810
Percent of Normal	75%	100%	140%	60%	75%	110%

CHURCHILL RIVER SYSTEM				
Month	Mean Monthly Flow (m <sup>3</sup> /s)			
	Reindeer Lake Inflow	Reindeer River above Devil Rapids	Churchill River above Otter Rapids	Churchill River at Sandy Bay
February	260	400	370	940
March	250	400	320	870
April	240	400	280	800
May	280	400	250	750
June	610	400	240	720
July	600	400	300	760
Percent of Normal	100%	100%	180%	140%